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Project 517-1.1

Kaiser Aluminum and Chemical Corporation
Trentwood Works
P. O. Box 15108
Spokane, Washington 99217

Attention: Mr. Philip Williams

Gentlemen:

This letter summarizes my verbal comments regarding conditions at the East Landfill, which had been used for dross disposal from about 1962 to 1969. The landfill is currently used for disposal of small amounts of inert wastes.

As part of my review, I inspected the East Landfill site on November 11, 1981 and read reports prepared by Sweet, Edwards and Associates, Inc., entitled "Trentwood Plant Monitoring Well Data Evaluation," August 1980, and "Proposed Kaiser-Trentwood Plant East Landfill Leachate Mitigation Plan," November 1980. In general, I concur with the recommendations in the mitigation plan, but offer a few alternatives and other items for consideration, as discussed below.

BACKGROUND

There is no doubt that the dross in the East Landfill is increasing concentrations of chlorides in the ground water at Well 4. The seasonal nature of this occurrence is linked to the high infiltration of water during the spring thaw which leaches chlorides from the landfill and carries them into the ground water. During the remainder of the year, water infiltration is sufficiently low to preclude further leaching or leaching is at such a low rate that it is not detectable. Ground-water elevations are lower than the bottom of the landfill and ground water is not in contact with the deposited wastes.

Capping or surface sealing with a liner should reduce infiltration of precipitation into the landfill and prevent leaching of the wastes.

LINER MATERIAL

Several synthetic liners, such as PVC, Hypalon, CPE, and asphalt, as well as clay soil, are available to use as seals over the landfill. Use of synthetic materials will require special preparation of the subgrade prior to placement, addition of protective cover and higher cost of materials than clay soil. The clay soil will also allow future movement of equipment on the surface and differential settlement of the filled materials without a high risk to the liner integrity. The useful life of the clay liner will equal or exceed that of liners made of the other materials. Therefore, clay soil is the most cost effective liner material.

I recommend, however, that the clay soil be increased from a 1-foot-minimum thickness to approximately 2 feet over the landfill area. This will provide greater moisture retention capability and allow more flexibility in grading of the clay surface. A 1-foot layer of top soil can be placed over the clay to assist in establishing a grass cover to reduce erosion.

GRADING

The final surface on the landfill should be graded to provide rapid drainage. I suggest a minimum 3 percent cross slope to be used from a ridge line in an east-west direction approximately down the center of the landfill area. The surface can be rough graded using waste materials, on-site soils or imported materials. Grading should be accomplished in thin lifts and all material track rolled as the minimum compactive effort. The edge of the open slope to the east should be specially graded to prevent runoff from flowing over the edge and entering the landfill through the uncompacted slope.

If placement of wastes continues along the east slope, the slope will act as a minor source of infiltration and may cause leaching along the eastern side of the existing landfill. To reduce this effect, the area disturbed should be minimal and the area graded frequently to promote runoff to the east.

Future filling and/or grading of the eastern portion of the quarry could direct runoff into the existing landfill area. Since Kaiser does not control the eastern portion of the quarry, a setback from the property line should be maintained or some other safeguard taken so runoff will not migrate to the landfill. The bottom of the excavation should be sloped away from the waste fill slope so infiltration into the ground will be away from the area where wastes have been placed.

RUNOFF DISPOSAL

Drilling logs in the referenced reports and inspection of the quarry side walls show a sand and gravel deposit with little or no fine-grain soils. These sands and gravels will allow for rapid infiltration of water with only minor horizontal spreading of infiltrating water during

the downward flow to the ground-water table. With this condition, it should be possible to dispose of runoff from the graded landfill surface along the western limits of the Kaiser property rather than along the road on property owned by others. This assumes no wastes have been placed in the western edge of the property. This can be confirmed by placing test borings in the western area.

The surface runoff should be routed into a shallow percolation basin sized to accept the maximum anticipated runoff without backing water up the collection ditches. The spoil from the basin could be used for rough grading the landfill area prior to placing the liner.

GAS CONTROL

The highly permeable soils surrounding the landfill and the large exposed slope on the east side will provide venting for any ammonia or other gases generated by the wastes. With these conditions, little, if any, lateral migration should take place. The reduction of moisture infiltration should also reduce gas generation.

The above conditions should preclude the need for installation of a gas venting system. The landfill should be monitored after it has been capped for gas migration, and if problems are encountered, a venting system can be installed at a later date.

Should you have any questions concerning my observations, please call me.

Very truly yours,
EMCON Associates

Donald R. Andres
Vice President

DRA:dc

cc: E.P. Paille, Oakland